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ABSTRACT

Using the High School and Beyond dataset, this report assesses the importance of social capital in determining academic outcomes of Latino youth. An introduction explains J. S. Coleman's definitions of financial, human, and social capital in the student's environment, social capital being the norms, social networks, and social relationships that benefit the child. Confirmatory factor analysis was used to operationalize social capital in home and school. Social capital of the home was measured by 12 survey variables focusing on parental expectations and involvement in student's high school activities. Social capital in school was measured by six variables related to teacher and guidance counselor influences. Data were examined for 1,658 Latino and non-Latino White sophomores in 13 western states, and for 1,329 of these students still in school 2 years later. Scholastic performance was measured by grade point average and by educational attainment 6 years after the sophomore survey. Educational attainment was lowest for students in vocational programs, whether Latino or White, a finding not fully explained by socioeconomic status (SES). White students in vocational programs had less social capital from home than Latinos in college-bound programs, and slightly less social capital from home than Latinos in vocational programs. Findings were similar for social capital from school. The study concludes that the social capital of home and school environments is very important in determining educational outcomes of both White and Latino youth, holding SES constant. Suggestions are offered for improving social capital formation in public schools. (Contains 28 references.) (SV)

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Ethnic Studies
Cal Poly University
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Julian Samora Research Institute
Research Report No. 11
1996

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SOCIAL CAPITAL AND THE EDUCATIONAL PERFORMANCE OF LATINO AND NON-LATINO YOUTH

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Research Report No. 11

About the Author: Elías Lopez is an assistant professor of Ethnic Studies at Cal Poly University in San Luis Obispo, California. This work is based on his doctoral dissertation in Agricultural Economics from the University of California, Davis, 1994. Thesis advisors included Professors Refugio I. Rochin, Patricia Gandara, and Edward J. Taylor, of Chicano Studies/Agricultural Economics, Education, and Agricultural Economics, respectively.

SUMMARY AND OVERVIEW

Using the High School and Beyond dataset, this report attempts to determine whether the economic concept known as "social capital" can help explain the academic achievement of Latino students. The report also relates the pre-labor market environment of youth to the basic economic theories which try to account for the status of Latinos in the labor market. Specifically, the report assesses the importance of human, financial and social capital in determining the academic (and life) outcomes of Latino youth.

While the report initially posits the role of financial, human and social capital available in the three separate pre-labor market environments of the home, school and community, many of these aspects of the study eventually drop out. The concepts of financial and human capital provided by the home are replaced by the composite variable of socioeconomic status (SES). In addition, the High School and Beyond dataset does not provide sufficient information on the community to allow for measurement of any type of "capital" in that realm; nor is the human and financial capital provided by the school environment operationalized. Hence, the report is left to focus on measuring the social capital available to the student (Latino and non-Latino) at home and in the school, holding in consideration the SES and the student's own effort level (measured in hours spent on homework). Confirmatory Factor Analysis is the selected method; Latino and White students are the selected populations.

The targeted populations are divided into four categories based on race and educational tracking: Latinos in college-bound or vocational programs, and Whites in college-bound or vocational programs. Although a number of the theoretical factors are not measured, the study shows that, amongst these four groups, educational attainment is by far the lowest for those in vocational programs, whether Latino or White. SES does not appear to fully explain this outcome, because Latinos in college-bound programs out-perform Whites in vocational programs despite the two groups' similar socioeconomic backgrounds. This is to say that Whites in vocational programs perform just the same as or worse than Latinos in vocational programs, despite the White students' higher SES.

Picking twelve variables which are meant to quantitatively measure the social capital of the student's home, the study then goes on to see whether "social capital" is more useful than SES in predicting educational outcomes of Latinos and non-Latinos. The twelve variables selected focus on the parents' involvement in the student's high school activities. These dimensions of "social capital" appear to be more useful than "socioeconomic status" (SES), because, upon quantifying the twelve variables within the four different groups, it is found that Whites in vocational programs have less social capital available from home than Latinos in college-bound programs. White youth in vocational programs even have slightly less "social

capital" than Latino youth in vocational programs. This also holds true when the social capital of school is measured, using six variables which focus on the influence of teachers and guidance counselors.

The study concludes that the "social capital" from the home and school environments are very important factors in determining educational outcomes of both White and Latino youth, holding SES constant. Citing the small amount of time spent on homework, it further concludes that the idea of individual intelligence is overemphasized in our public school system. What is statistically significant is the importance of "social capital" for all students, strongly suggesting that home and school environments which foster guided reading and writing activities, are more conducive to improved educational outcomes than the "socioeconomic status" (SES) of students. The study recommends that further work is needed to better qualify social capital in the pre-labor market environment of youth.

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Introduction

I. Background

Since the Great Depression years, and especially after the 1960's, a concerted effort has gone into understanding poverty and income inequality. To account for differences in income, economists have developed income profiles based on an individual's age, number of years of schooling, type of occupation, number of hours worked, experience, region, industry type, and language proficiency. Almost all empirical studies of this kind find that women have lower earnings than men, and that White men tend to earn more than Black and Latino men, ceteris paribus.

This may be due to discrimination, in part. According to Ehrenberg and Smith (1994) , there are two types of discrimination, personal discrimination and statistical discrimination. Personal discrimination exists because the employer, fellow employees, or consumers prefer not to interact or work with certain individuals, such as minorities and women. The consequences for the discriminated group of individuals are lower employment opportunities and wages.

Lower employment opportunities also result from statistical discrimination. In hiring, employers have to judge the potential employee usually with only limited information. In such cases, statistical discrimination occurs if the decision to hire is based not on the true potential of the individual, but on generalizations about the group of which the applicant is a member. An employer may choose not to hire a female, for instance, under the presumption that her labor force participation will be interrupted by her domestic responsibilities.

Following the two theories presented above, some economists argue that under a competitive labor market environment the laws of supply and demand predict that discriminating firms would lose money, relative to nondiscriminating firms. A discriminating firm, in excluding certain types of workers, creates a smaller labor pool from which to hire.

Since potentially fewer workers are pursuing the same jobs, workers can demand higher wages. On the other hand, nondiscriminating firms would face an oversupply of workers, which would serve to depress wages, to the advantage of these firms. Thus, nondiscriminating firms would win as a result of the conscious discrimination of other firms . Proponents of these theories therefore argue that perfect competition is the solution to discriminating practices in the labor market.

Other economists question this logic, however, claiming that the labor market is not one big labor market, but separate labor markets, each with its own pay scale. Thus, even if a given labor market becomes competitive, discrimination against minorities and women will exist as long as barriers to movement out of low wage sectors persist.

Ehrenberg and Smith also have three explanations to explain the wage differential between the different labor sectors: the overcrowding theory, the dual labor market theory, and the collusive employer theory.[1] The overcrowding theory states that barriers to labor mobility are purposely placed to create an oversupply of workers in certain labor markets. This oversupply or "overcrowding" then serves to depress wages in those labor markets. The Dual Labor Market theory is similar, except that it postulates that there are two labor markets, a primary and a secondary one. The primary is a high wage market where workers are expected to have more education and work independently. The secondary labor market is characterized as a low wage market with few fringe benefits. Secondary workers are viewed as not having had much education and needing direct supervision, with few fringe benefits. Besides the more general "overcrowding" theory and the more specific Dual Labor Market theory, economists have also postulated a third theory that if employers collude to become monopsonistic (sole employer), wages can be kept low in a given stratum. If such is the case, the possibility exists that White employers can force minority workers to accept lower wages.

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[1] Once again, see Ehrenberg and Smith (1994) , chapter 12, for a list of the proponents of these theories.

A drawback of the theories presented thus far is that they overlook the role of the individual in the income attainment process. According to human capital theorists, individuals make conscious decisions to invest in their education or training to maximize their lifetime net returns. A high school student will decide, for instance, to finish high school only if the rate of return from finishing is higher than the rate of return from dropping out. Thus, human capital theory suggests that dropping out of high school may be an economically rational decision. It justifies the action based on the student's evaluation of the returns from different alternatives, ceteris paribus[2], i.e., given the structure or the discriminating practices of the current labor market and the pre–labor market environment.

Thus far, economists have given much attention to the structure and importance of the current labor market and the human capital model for explaining individual success in the economy. However, little has been said about the pre–labor market environment; about the way people develop contacts and/or experiences which in turn inform them of their future opportunities. Economists have long realized that some opportunity sets are important in early years, such as the quality of the school, home, and neighborhood. These factors can, to a large extent, determine what a student learns, the grades the student receives, and the student's level of educational attainment. For instance, Card and Krueger (1992) found that improvements in the quality of schools attended by Southern–born Blacks can explain up to twenty percent of the narrowing in the Black–White earnings gap between 1960 and 1980. But students today are influenced by much more than these factors, by their peers, associations and mass media.

Even though research on the pre–labor market environment, particularly the physical conditions at school, promises to provide a better understanding of the income attainment process, the field of economics has been slow to explore the out-of school influences. For instance, in the Card and Krueger study mentioned above, the variables used to measure school quality (pupil–teacher ratios, annual teacher pay, and length of academic term measured

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[2] Ceteris paribus, a term widely used in Economics, is Latin for "everything else constant."

in days) seem to measure only the financial resources of the school. In addition, these variables only address inter-school comparisons that cannot possibly capture whether or not two groups of students are treated differently both outside and within the same school. In another study, this time regarding gender, Sadker and Sadker (1994) found that schools shortchange girls. They note that in the early years girls are equal or even ahead of boys on almost every standardized test, but by the time they leave high school, they test below boys in almost every subject, especially in the sciences and in math. This, they claim, is a consequence of the lower expectations and attention that girls face in comparison to boys both outside and within the same classroom.

Altogether, these theories and findings serve to reveal the complexity of understanding poverty and inequality in society. They also reveal that more research is needed to group the way a young person's future is developed both within and outside of school. How much of that future is determined by finances, "human capital" decisions, sheer individual fortitude or by the so-called "environment?" How much of the future is molded by others who live and work with our youth?

II. Objectives

There are two related issues that this study will address concerning the pre–labor market environment: one, how to theoretically depict it; and two, how to empirically account for it.

The concepts of human, financial, and social capital will be used to address the first issue. For this study *financial capital* refers to the monetary and material resources available to the student, whether at school, at home, or in the community. *Human capital* refers to the quantity of knowledge and education that those around the student possess. Finally, *social capital* refers to the attention and high expectations that result from the trusting relationships others form with the student. It is a qualitative variable that is usually difficult to measure.

The second issue will be addressed by justifying the use of Confirmatory Factor Analysis over other popular latent variable (composite variable) estimation techniques such as Summated Rating Scales, Loglinear Analysis with Latent Variables, Latent Class Analysis, and Factor Analysis.

Given the factors and the ways in which they can be operationalized, it will then be shown that they are indeed useful for evaluating the type of education the student obtains. The estimated latent variables representing each factor will be examined individually using One-way Analysis of Variance and Contingency Table Analysis, as well as in a multivariate setting with a Logistic Regression.

This study, therefore, has three objectives and three questions. The objectives are:

1) To delineate the factors depicting the pre–labor market environment of White and Latino youth;
2) To discuss how these factors might be statistically operationalized through latent variable estimation techniques; and
3) Using 1) and 2), to try to explain empirically why large numbers of Latino youth have relatively poor performance in high school.

The questions to be addressed are:

1) *Do Latinos really perform much worse on scholastic tests than non–Hispanic Whites, ceteris paribus?*
2) *Can the variables of social capital of the school, social capital of the home, socioeconomic status, and student effort, be used to explain the differences between these groups of students?*
3) *Is social capital an important element affecting the scholastic achievement of White and Latino youth?*

To accomplish these goals, this study will need to go beyond the field of economics. It will have to borrow from the fields of education and sociology.

Section 2

Theoretical Considerations: Financial, Human, and Social Forms of Capital

I. Introduction

Empirically, our current ability to measure the environment surrounding a student, whether at home, at school, or in the community, is rather limited. There is no cohesive theory indicating the factors that should be measured, much less, one that describes how these factors affect student behavior. What is needed is a catalyst that can move the science of empirically accounting for the environment of an individual to a new level. Coleman (1988) seems to have provided this catalyst by popularizing the concepts of financial, human, and social capital as mutually exclusive resources available to individuals at varying levels. Nonetheless, the catalytic reaction is barely taking force. There is much more that needs to be done before we can confidently say that we are empirically controlling for the environment. My review of the large body of research on social environments conducive to learning suggest that the following characteristics are imperative to achievement: high educational expectations, open styles of communication, low–key, yet supportive parental reactions to grades, high parental interest and involvement, emphasis on hard work and not ability, parental monitoring, and student involvement in the decision-making at home (Dornbusch & Wood, 1989; Ecksel, 1992; Lopez, 1994).

Another sign of the underdevelopment of social factors is evident when we attempt to measure the many meanings of "environment." This is illustrated in the following variables, which many of the studies used to measure the social capital of the home: *current living arrangements, early childbearing, household size, number of siblings, mother worked while child was young, both parents in household.* These variables all assume that one situation is necessarily better than the other and that the better situation is representative of higher levels of social capital. Take, for example, the variable *"both parents present at home."* This is presumably the preferred situation, i.e. if both parents are mature individuals, they get along

and they nurture their children. But there is no guarantee that a two–parent home is better than a one–parent household in real nurturing. Although this factor may be a good proxy variable in general, the assumptions may not always hold true regarding two-parent households..

I. The Coleman Concepts: Defining Financial, Human, and Social Capital[3][4]

In his article titled, "Social Capital in the Creation of Human Capital," Coleman (1988) proposed that the environment of the student be partitioned into three factors: financial, human, and social capital. According to Coleman, these capital variables act as resources and affect individual behavior through their productive capacities just as higher levels of physical capital give firms more flexibility in the type of actions they may take.

In particular, Coleman defines *financial capital*[5] as the financial and material belongings that might make a person more productive in the knowledge acquisition process. The assertion is that students with higher levels of financial capital are likely to do better in school, ceteris paribus. Financial capital can therefore be defined as the financial and material resources at home, at school, and in the community that make a student more productive in learning.

The concept of human capital has been defined after using the concept of physical capital in economics as well. According to Rosen (1989*: 136*) , physical capital is the "stock

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[3] Coleman is not the first to introduce concepts of financial, human, and social capital, or concepts similarly defined. Yet, he is among the first to purposely differentiate the three concepts.

[4] Coleman is not the first to introduce concepts of financial, human, and social capital, or concepts similarly defined. Yet, he is among the first to purposely differentiate the three concepts. [5] Coleman is not the first to introduce concepts of financial, human, and social capital, or concepts similarly defined. Yet, he is among the first to purposely differentiate the three concepts. [6] Pierre Bourdieu has also introduced a similar concept titled "economic capital" (Rupp & Lange, 1989) .

of skills and productive knowledge embodied in people."[7] Human capital of the family, school, and community can then be defined as the stock of skills and knowledge embodied in members of the family, school, and community. In this context, the skills and knowledge of these people are valuable because they can be passed on to the student. The assertion is that increases in the level of human capital surrounding the student improve the educational performance of the student, ceteris paribus. Human capital is usually measured through variables that account for a person's education.

To account for the social resources available to the student, Coleman has popularized the concept of social capital (Coleman, 1987a; Coleman, 1987b; Coleman, 1988; Coleman, 1990; Coleman & Hoffer, 1987) .[8] Coleman defines social capital as the "norms, the social networks, and the relationships between adults and children that are of value for the child's growing up" (Coleman, 1987a: p. 36) . The relationship aspect accounts for the obligations, expectations, and trust that persons have for one another, The social networks component accounts for the potential transfer of information that can occur. Finally, the norms aspect accounts for the degree of enforcement of the prescribed behavior.[9] All three components are highly interrelated and are of a productive nature, since they facilitate certain actions of individuals.

III. A Refinement of the Definitions: The Realm of the Home, School, and Community

The definitions of human, financial, and social capital can be developed further by defining the boundaries of the home, school, and community. The work of Coleman and Hoffer(1987) will be used to help us develop these definitions.

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[7] See Rosen for a bibliographic account of the term in economics.

[8] Coleman gives credit to Loury (1977; 1987) for introducing the concept in its present form. Coleman also states that Bourdieu (1980) and Flap and De Graaf (1986) have used the term in a similar fashion.

[9] See Coleman (1988) for more information.

In 1987 Coleman and Hoffer proposed that the concept of community social capital be used to explain the unaccounted differences in dropout rates between students in Catholic and public schools. Catholic schools, they argued, have around them a functional community that serves to enforce the norms of the family and the church. Public schools on the other hand, usually do not. As a consequence, students in public schools have an environment that is less supportive, thereby explaining the higher dropout rates. [10]

In using the term "community social capital," however, it is not clear whether the authors are referring to social capital brought about by a community with a life independent of the school, or whether they are referring to social capital that is a result of the functions of the school. Schools, through their policies, practices, and philosophies create norms and standards for students and their families (Steinberg, 1989) . Thus, it may be that the very set-up of Catholic schools creates the functional community that the authors allude to. One can then make the argument that it is social capital of the school and not social capital of the community that is responsible for the differences in dropout rates.

This leads us to define the boundaries of the home, school, and community as follows. For the home, the variables of human, financial, and social capital are to be measured as a function of what goes on in the confines of the home. Likewise, capital variables for the school are to be measured as a function of the structure of the school. This leaves the community capital variables to be defined as a function of what happens outside the home, and activities that are not a result of the functioning of the school.

With the above definition, social capital of the school should not only be based on the customary student-teacher relationships, but any community environment that results from the activities and functions of the school. This includes parent-teacher relationships, teacher-teacher relationships, student-student relationships, parent-parent relationships and so on. Likewise, social capital of the home should include more than the student-parent

[10] They adjusted the dropout rates to account for the background of the student.

relationships. It should also include sibling–sibling relationships, sibling–friends of the family relationships, and sibling–extended family member relationships.[11]

IV. Conclusion

The foregoing discussion defines the concepts of financial, human, and social capital within the realm of the home, school, and the community. Yet to date, there are only a small number of studies that have attempted to operationalize these concepts. The attempts, however, are limited in what they accomplish. Furthermore, and not yet discussed, statistically, most of the studies utilize various variables for a given concept and do not address the issue of measurement errors in the survey variables, i.e., they do not address the issue of how best to measure a theoretical concept like social concept empirically.

There is a clarification that should be made before going on, however. Although this chapter has further defined the concepts popularized by Coleman, this is not to imply that there are not better ways to partition and measure the environment surrounding a person. For instance, it is not at all clear that financial and human capital are all that different. The composite variable of *socioeconomic status* usually incorporates variables that would be used to measure financial and human capital of the home. As a matter of fact, this study uses the variable of socioeconomic status over financial and human capital of the home since the variable of socioeconomic status was already computed and provided as part of the dataset that was used. Furthermore, this study does not operationalize all the capital variables defined above (nine in all). Limitations on the data prohibited me from measuring the three capital variables for the community. Also, for the same reason, financial and human capital of the

[11] There is evidence that relationships with extended family members depend on the structure and functioning of the family. For instance, Steinberg cites the work of Keefe (1980) to show that Mexican Americans tend to view their family as also including extended family members. Thus, compared to Anglo American families, Mexican American families tend to rely more on and live closer to extended family members.

school are not operationalized. This study focuses on constructing variables for social capital of the home and school, to thereby test their importance in relation to socioeconomic status and student effort.

Section 3

Methods of Analysis

I. Introduction

The problem of how to best measure theoretical concepts like social capital of the home and of the school involves two issues: first, how to define the theoretical concept; and second, how to choose a statistical technique appropriate for the data at hand. The former chapter dealt with the first issue. This chapter will deal with the second issue. This chapter explains why Confirmatory Factor Analysis was chosen over other *latent* or unobserved variable estimation techniques in addition to the study sample used and the reason this particular study sample was used. Furthermore, this chapter includes a step–by–step procedure on how the hypothesis that Latinos have lower levels of social capital at school will be tested.

II. Confirmatory Factor Analysis (CFA)

Confirmatory Factor Analysis (CFA) was used to operationalize the concepts of social capital of the home and school, relying upon survey variables that most closely matched the definitions given in the previous chapter. Social capital of the home, for instance, was estimated by jointly taking twelve survey variables that measured the relationship aspects of the home (the expectations for success and the level of parental involvement) under the specification that only one latent, i.e., factor, variable be estimated in CFA.

In comparison to the other techniques of creating a composite variable, such as Summated Rating Scales, Regular Factor Analysis, Latent Class Analysis, and Loglinear Models with Latent Variables, Confirmatory Factor Analysis was the preferred choice for the following five reasons: one, it enables the researcher to specify how many latent (factor) variables it wants from the given survey variables. Two, it provides a natural framework to deal with the problem of measurement error in survey variables. Each survey variable has an equation that accounts for effects arising out of the latent variable and those due to

measurement error. Three, the situation of one measurement error influencing the measurement error of another survey variable can be easily modeled since CFA works directly with the covariation or correlation matrix of the survey variables. Given the specified measurement error equations, the objective of CFA is to estimate a covariation matrix that most closely resembles the sample covariation matrix. Four, CFA is a statistical approach. It assumes that the measurement errors have certain statistical properties. Thus, one confirmatory factor model can be chosen over another on statistical grounds. And five, CFA is versatile enough to work with ordinal categorical and continuous type survey variables jointly since it only needs the sample correlation matrix as input. The correlation of ordinal categorical variables are adjusted from the regular Pearson–Product correlations, which assume that variables are of a continuous nature.[12]

III. Study Sample

The survey variables selected for the CFA models were taken out of the High School and Beyond (HS&B) dataset. The HS&B dataset was first established in 1980 by the National Center for Education Statistics (NCES), and included over 30,000 sophomores and 28,000 seniors from 1,015 public and private high schools across the nation. It includes detailed information on home and school characteristics, student achievement measures, attitudes and aspirations, as well as high school transcript information. It also includes information culled from surveys on school administrators, teachers, and parents. Subsequently, follow-up surveys of these students were conducted in 1982, 1984, and 1986.

The decision was made to focus the analysis on the sophomore cohort because students are captured in this cohort that otherwise would have dropped out by their senior year. Additionally, the sample was limited to the Western Region since this area includes the largest number of Hispanic students, allowing for the best test of Hispanic versus non-Hispanic White student differences. In the dataset, the Western Region is defined as the Mountain and Pacific

[12] For a more in depth discussion of this section see Lopez (1994), parts of chapters two and three.

areas.[13] Of students in this area, approximately 91 percent were in public schools and the racial composition was 72.8 percent White, 14.5 percent Hispanic, with 12.7 percent comprising all others. In an effort to control for differences in public and private schools, only students from public schools were included. Finally, only non-Latino White and Latino students were selected for study, thereby further reducing uncontrolled variability.

The study makes use of two different sample sizes. The larger sample size (1,658) includes all sophomores who participated in the base year survey. The smaller sample includes only those sophomores still in high school two years later (1,329); excluded are those who graduated early and that dropped out between the sophomore and senior year.

IV. Testing the Hypothesis: A Step by Step Procedure

The hypothesis that low levels of social capital are responsible for the poor performance of students will be tested in three steps. The first step requires the confirmation that Latino students are in fact doing poorly in school. For comparison, students are categorized into four groups: Latinos in general/vocational programs,[14] Whites in general/vocational programs, Latinos in academic college-bound programs, and Whites in academic programs. Two variables will be used to examine the scholastic performance of students: grade point average,[15] and educational attainment.[16]

The curriculum variable will play a central role throughout the analysis. Theoretically, schools have control over the curriculum programs they provide. If general/vocational programs are doing what they were designed to do, i.e., provide a better learning environment for those who are thought to be slower learners and more vocationally oriented, there should

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[13] The Pacific region incudes the states of Alaska, California, Hawaii, Oregon, and Washington. The Mountain region includes Arizona, Colorado, Idaho, Montana, New Mexico, Nevada, Utah, and Wyoming.

[14] High school curriculum track (general, vocational, and academic) variable was included in the HS&B dataset and was constructed out of student self-reported answers.

[15] High school grade point average was included as part of the HS&B dataset and was taken from high school transcripts. If missing from the high school transcript, student self-reported answers were used.

[16] Educational attainment is measured six years after the high school sophomore questionnaire.

not be discernible differences between their grades and those of students in academic programs. Students of general/vocational programs should have about the same likelihood of receiving a "B" or above as students taking the more competitive academic courses. The extent to which one program consistently assigns lower grades serves only to limit the opportunities of its students.

The second step will examine the quality of the environment at home and at school to determine which of the capital variables are associated with poor scholastic performance. The composite variables, family socioeconomic status,[17] social capital of the home,[18] and social capital of the school,[19] were examined for the four groups of students. Besides the composite variables, the number of hours per week the student spent doing homework (a proxy variable for student effort) was used to further profile the groups. Differences among the four groups of students were examined through One-way Analysis of Variance "Range Tests"[20] and a modified form of contingency and loglinear analysis.[21]

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[17] Socioeconomic status is a composite variable taken from the HS&B dataset that accounts for parental education, father's occupation, family income, and material possessions in the household. After standardizing each variable, the simple average of the non-missing components was taken (Sebring, 1987) .

[18] The survey variables measuring the degree to which the student feels that parents 1) keep track of school progress, 2) have after high school expectations, 3) influence after high school plans, 4) know where the son or daughter is and what he or she does at all times, 5) attend PTA meetings, 6) volunteer for school projects, 7) talk with their son or daughter, 8) want son or daughter to succeed educationally and, 9) visited the student's classrooms, were used to create a composite variable for social capital of the home using Confirmatory Factor Analysis.

[19] Confirmatory Factor Analysis was used to estimate social capital of the school out of the following student self-reported set of variables: 1) what guidance counselors and teachers think student should do after high school, 2) amount counselors and teachers influence after high school plans, 3) rating of teacher's interest in students, and 4) the number of teachers interested in students beyond the classroom setting.

[20] In the world of one-way analysis of variance, range tests are used to test for mean differences among groups when there are more than two groups. A range test first orders the groups according to their means, from the smallest to the largest. It then tests pairwise differences between the groups. In our case, with four groups, six separate tests or comparisons were done. Range tests are useful in that they test for mean differences among multiple groups while controlling for Type I error (the probability of erroneously making the claim that two groups are significantly different when in fact they are not). Multiple comparisons within a single experiment increases the probability of committing a Type I error.

Of the available range tests, the Scheffé Test, the Modified Least Significant Difference Test (MLSD), and Tuckey's Honestly Significant Difference Test (HSD) were used. Of the three methods, Scheffe's is the most conservative in that it requires a bigger difference before claiming that two groups are significantly different. The least conservative of the three is

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Even though a variable may prove to be significant in a univariate setting, there is no guarantee that the variable will be significant in a multivariate setting. The third and final step in testing the hypothesis that social capital increases the educational performance of students involves a logistic regression. The relative importance of social capital can be tested in the presence of the other variables analyzed in step two. Unlike step one and two where students where divided into four groups by curriculum and race, step three uses only the curriculum variable to group students. It serves as the dependent variable in the logistic regression. Thus, a unit increase in one of the independent variables can tell us how much more likely a student is to end up in an academic versus a general/vocational curriculum.

Tuckey's HSD. However, for this study, the three tests agreed with each other using an alpha level or a Type I error of 0.05. In conducting the tests, the degrees of freedom were adjusted to reflect the actual sample and not the weighted sample. For more details on ONE-WAY Analysis and Range Tests see (Klockars & Sax, 1986) .

[21] The motivation behind contingency table analysis and log-linear models prompted the development of a very useful and yet simple way to compare groups. The approach is based on comparing the frequencies of one group falling in a certain category over another group. With the assumption that the observations come from a random sample representative of the population, the likelihoods of one group over another is computed in two steps. The first step calculates the *odds* likelihood for those within the same group of falling in the desired category, say getting grades of "B" or better, as opposed to grades lower than a B. The second step determines the *odds ratio* likelihood that one group has of falling in the given category, relative to another group. This involves dividing the odds of one group by the odds of the other group, thus the name *odds ratio*.

A likelihood value of 1, whether it be an odds or an odds ratio, indicates equal distribution. A value greater than one indicates over-representation of the first group in the given category, and a value less than one implies under-representation. Since likelihoods greater than one are easier to interpret, we used the group having the smallest likelihood from step one as the benchmark for comparisons—the odds likelihood of all the other groups were then compared to that group. Following is the formula used throughout the study to compare the relative frequencies of one group falling in a given category relative to another group:

V. Conclusion

Thus far, the environment surrounding a student has been partitioned into factors and each factor defined. Moreover, a discussion has been given on the statistical considerations of operationalizing these factors. Still to be discussed, however, are whether these factors, especially the social capital variable factors, are of any importance, .

Section 4

Results

I. Introduction

Statements are often heard as to how the school system fails Latinos. This chapter will attempt to verify whether or not this is indeed true. It will first examine whether or not Hispanics are performing much worse than non–Hispanic White students. Then it will look to the variables of social capital of the school, social capital of the home, student effort, and socioeconomic status for explanations.

II. The Shortcomings of Being in a General/Vocational Program

Are Latinos really performing much worse scholastically than non–Hispanic Whites? In 1980, three–quarters, or 75.6 percent, of Latinos attending public schools in the Western Region of the United States were in general/vocational programs. Surprisingly, the majority of White students (57.5 percent) were also in general/vocational programs (see the table below).

Table 1: Percentage of Latinos & Whites by High School Curriculum—1980 Sophomores

Type of Curriculum	Latinos	Whites
General/Vocational	75.6	57.5
Academic	24.4	42.5
% of Weighted Sample:	16.1%	83.9%

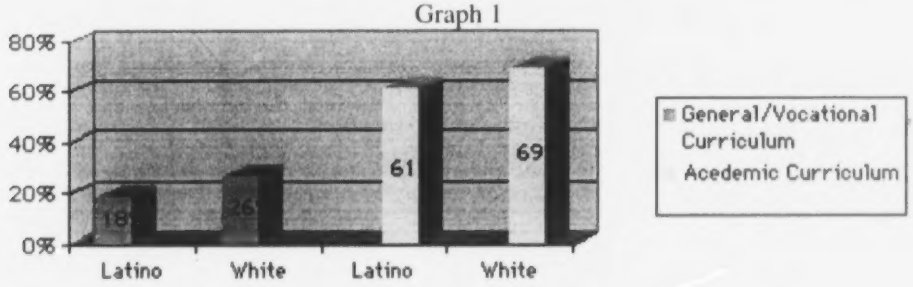
(Sample Size = 1603)

Converting these figures into likelihood ratios we find that a Latino has a 3.1 to 1 chance of being in general/vocational programs, relative to other Latinos. For White students the ratio is 1.4, almost a one to one ratio. Comparatively then, taking 3.1 and dividing it by 1.4 gives 2.3. Thus, Latinos are 2.3 times more likely than White students to be in general/vocational programs.

To find out what these numbers really mean, following is a graph that presents the grade distribution for Latinos and Whites broken down by the type of curriculum followed in high school. Each bar represents the percentage of students with grades of "B" or better out of

the given group. The first bar corresponds to the grade distribution of Latino students in general/vocational programs, the second to Whites in similar programs, and the third and fourth to the grade distribution of Latinos and Whites in academic (college–bound) programs, respectively.

Graph 1



(Sample Size = 1651 sophomores of 1980)

The chart above reveals a very pronounced pattern in grade distribution between students of the different curricular programs. In the academic group, 61 and 69 percent of the Latino and White students, respectively, had a grade point average of "B" or better. However, for Whites and Latinos in the general/vocational curriculum, the figures are 18 and 26 percent, respectively. The graph shows that students in general/vocational programs consistently get lower grades than students in academic programs. Surprisingly, this finding applies to both Latino and non-Latino students. The indication is that it is better to be in an academic program than in a general/vocational program.

An examination of the educational attainment of these students six years after the sophomore year lends further support to this statement. Although four years after high school is not a very long time, considering that it now typically takes more than four years to complete a bachelor's degree, the emerging patterns are informative. Table 2 gives the educational attainment for Latino and White students by type of high school curriculum.

Table 2: Educational Attainment—1980 Sophomores

Educational Attainment	Latino Gen/Voc	White Gen/Voc	Latino Aca	White Aca
% LT H.S. Diploma	20.7	12.3	5.0	1.4
% H.S. Diploma	67.7	76.8	66.3	80.4
% License/Certificate	8.2	7.5	12.2	6.5
% 2-3 Yr Degrees	3.4	2.9	14.8	6.0
% 4 Yr Bachelor's Degree	0	0.6	1.7	5.8
% of Weighted Sample:	12.1	47.9	4.0	36.0

(unweighted sample = 1609)

The table above shows that only 5 percent Latinos and 1.4 percent of Whites in academic programs did not have their high school diploma six years after their sophomore year in high school. By contrast, 12.3 percent of Whites and 20.7 percent of Latinos in general/vocational curriculums did not have their high school diplomas after the same period of time. Students in academic programs are already showing that they are ahead of the general/vocational students in obtaining college degrees. Except for the proportion of White students in academic programs obtaining licenses or certificates, all the other figures show students in academic programs obtaining proportionately more licenses or certificates, and 2-3 year vocational degrees. Based on the numbers above then, students in general/vocational programs have lower levels of educational attainment in practically all of the categories.

The analysis thus far shows that students are better off in an academic program than in a general/vocational program. The analysis also shows that Latinos have a far higher probability of being in general/vocational programs. Nevertheless, the situation for White students is cause for concern as well. Even with a 1.4 to 1 ratio, the number of White students in a general/vocational program is quite large since White students compose 83.9 percent of the weighted sample. Thus although the scholastic problems are more acute for Latinos, these problems are not restricted to them, suggesting that explanations need to go beyond the race factor. Academic tracking seems to account for large differences in the scholastic performance of Hispanics and non–Hispanic White students. It is of interest to know what aspects of the different tracks cause students to perform at different levels.

III. A Portrait of the Home and School Environment[22][23]

This leads us to the second question, *can the variables of social capital of the school, social capital of the home, socioeconomic status, and student effort, be used to explain the differences between these groups of students?*

Any portrait involving the background of the student has to necessarily include a measure of socioeconomic status. In this section we examine the likelihood of belonging to the

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[22] The previous section used data on all 1980 sophomores attending public schools in the Western region. For the analysis that follows, however, data on only 1980 sophomores still in high school two years later is used— excluded are early graduates and those who dropped out between the sophomore and senior year. The smaller sample, consisting of those 1980 sophomores that were still in high school in 1982, was used because correlations among many of the survey variables collected in 1980 were poorly correlated. Regardless, the grade distribution and educational attainment for these students follow the same pattern.

[23] The previous section used data on all 1980 sophomores attending public schools in the Western region. For the analysis that follows, however, data on only 1980 sophomores still in high school two years later is used— excluded are early graduates and those who dropped out between the sophomore and senior year. The smaller sample, consisting of those 1980 sophomores that were still in high school in 1982, was used because correlations among many of the survey variables collected in 1980 were poorly correlated. Regardless, the grade distribution and educational attainment for these students follow the same pattern.[24] The previous section used data on all 1980 sophomores attending public schools in the Western region. For the analysis that follows, however, data on only 1980 sophomores still in high school two years later is used— excluded are early graduates and those who dropped out between the sophomore and senior year. The smaller sample, consisting of those 1980 sophomores that were still in high school in 1982, was used because correlations among many of the survey variables collected in 1980 were poorly correlated. Regardless, the grade distribution and educational attainment for these students follow the same pattern.[25] This is done by ordering the observations and assigning a value of 1 to all those that fell in the first twenty-five percent of the cases. A 2 is then assigned to those falling between twenty-five and fifty-percent of the population. A value of 3 is given to those falling between fifty percent and seventy-five percent. And a value of 4 is assigned to those falling in the highest twenty-five percent of the sample.

highest two quartiles of socioeconomic status.[25] The following table gives the percentage of students under each group by quartile. In the lowest quartile, row (a) of the table, are 61.1 percent of the Latinos in general/vocational curriculums, 27.4 percent of the Whites in general/vocational programs, 37.4 of the Latinos in academic programs, and 11.4 percent of the Whites in academic programs. From these numbers it seems that Whites in academic programs have the highest likelihood of coming from the upper two quartiles of socioeconomic status, while Latinos in general/vocational programs from the lowest.

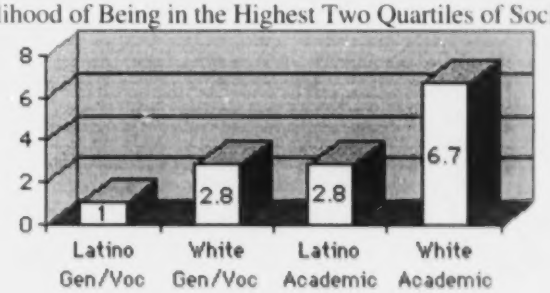
Table 3: Contingency Table for Socioeconomic Status

	Socioeconomic Status Index	Latino Gen/Voc	White Gen/Voc	Latino Aca	White Aca
(a)	% Quartile 1	61.1	27.4	37.4	11.4
(b)	% Quartile 2	17.4	28.6	18.4	24
(c)	% Quartile 3	13.7	24.6	25.7	28.5
(d)	% Quartile 4	7.8	19.4	18.5	36.1
	Odds for being in Quartile 3 & 4 vs. Quartile 1 & 2, compared to Latino Gen/Voc:				
(e)	Quartile 3 & 4 (vs. Quartile 1 & 2)	1.0	2.87	2.89	6.7

unweighted sample = 940

More formally, row (e) of the table gives the likelihood of being in the highest two quartiles, quartiles three and four, compared to Latinos in general/vocational programs. The following diagram is presented to visualize the comparisons.

Diagram 1: Likelihood of Being in the Highest Two Quartiles of Socioeconomic Status



According to the diagram, Latinos in academic programs and Whites in general/vocational programs are 2.8 times more likely, compared to Latinos in general/vocational programs, to fall in the higher two quartiles of the socioeconomic status

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index. For Whites in academic programs, the likelihood of being in the highest two quartiles jumps to 6.7. Thus, Latinos in general/vocational programs are at the bottom in terms of socioeconomic status, followed jointly by Whites in similar programs and Latinos in academic programs, and then topped by Whites in academic programs.[26]

With what we have learned so far, can the grades and educational attainment of the different groups examined earlier be explained?

The low socioeconomic status of Latinos in general/vocational programs certainly coincides with the low performance of these students at school. Also coming as no surprise is that White students in academic programs as a group have the highest grades and educational attainment . In the case of Latinos in academic programs, the higher socioeconomic standing might explain why they scholastically outperform Latinos in general/vocational programs. Puzzling, however, is that Whites in general/vocational programs have about the same socioeconomic status as Latinos in academic programs, yet they have higher dropout rates and lower grades than this group of Latinos. Thus, although important, socioeconomic status is only part of the picture.

It is possible that social capital of the home provides a different angle from which to view this situation. The variables used to operationalize social capital of the home (the social resources available to the student at home[27]) are listed on the following page. The top portion

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[26] Range tests conducted with one-way analysis of variance agree halfway with the ranking of the groups with respect to socioeconomic status. Range tests rank Latinos in general/vocational programs as the group having the lowest socioeconomic status and Whites in academic programs as having the highest. Unlike the likelihood diagram, however, the one-way table ranks Whites in general/vocational programs over Latinos in academic programs. Moreover, it indicates that the means of the two groups are significantly different. The contingency table presented above suggests the reason for this. Both Latinos in academic programs and Whites in general/vocational programs have about 56 percent of the group in the first two quartiles. This explains the similar likelihoods, given earlier, of falling in the upper two quartiles. Yet, Latinos in academic programs have ten percent more students in the first quartile than do Whites in general/vocational programs. Thus, in comparing group means, Whites in general/vocational programs are ranked as having a higher socioeconomic status as a group. For a table listing the results on the range tests see Lopez (1994).

[27] Survey variables measuring the relationship dimension of social capital, i.e., expectations for the student, degree of involvement in activities centered around the student, and the degree of being involved at a personal level with the student, were used. Note that there are other ways to define and operationalize social capital.

of the table provides statistics on the overall goodness[28] of the fitted confirmatory model. The second part of the table lists the variables based on their loadings, i.e., in order of their importance in defining the estimated latent variable.[29]

For the fit of the model, the top portion has the total coefficient of determination at 0.903. The coefficient of determination is analogous to the R-square in regression analysis, in that coefficients close to one represent a good fit. The adjusted goodness of fit index is also designed to be between zero and one, with values close to one reflecting a good model. For the model, the adjusted goodness of fit index is 0.878. Jointly, both statistics indicate that the variables fit the model of one latent variable fairly well.

There are studies that measure social capital from a networks perspective. Boxman, De Graaf, and Flap (1991) provide an example. They define social capital as the social networks available to a worker and use it to examine the income attainment of 1359 top managers of large companies in the Netherlands. They assumed that the following two variables measure the social capital of a worker: a work contact scale based on the frequencies of contacts with people in other organizations, and the number of memberships in elite clubs. Using the statistical program, LISREL 7, which estimates composite variables and conducts regression analysis jointly, they show that social capital measured as social networks has a substantial effect on income, even after controlling for the human capital of the worker.

[28] The Chi-Square statistic is not included in the table since it is sensitive to the sample size. For large samples it leads to a larger Chi-Square over and above what can be expected from model mispecification (Joreskog & Sorbom, 1988, p. 43) . Under such situations, it may lead to overparameterization of the model.

[29] In reviewing the importance of a variable in a table such as above, it is important to keep in mind that the relative importance of the variable, given by the loadings column, will depend on how well that variable is correlated with the other variables. This in turn will depend on how the variable is measured.

Table 4: Confirmatory Factor Analysis for Social Capital of the Home

Model Statistics	
Total Coefficient Of Determination:	0.903
Adjusted Goodness Of Fit Index:	0.878
Variables In The Model	Loadings
Father Keeps Track Of Progress In School	0.812
Mother Keeps Track Of Progress In School	0.804
What Father Thinks Should Do After HS	0.753
What Mother Thinks Should Do After HS	0.743
Amount Father Influenced Plans After HS	0.702
Amount Mother Influenced Plans After HS	0.676
Parents Know Where I Am, What I Do	0.517
How Often Parents Attended PTA Meeting	0.422
Parents Volunteered For School Projects	0.391
How Much Time Talking W Parents	0.388
How Far Parents Want You To Go	0.376
How Often Parents Visited Classes	0.300

Once constructed, we can examine the distribution of social capital. The table below maps the distribution of cases by quartile and group for social capital of the home.

Table 5: Contingency Table for Social Capital of the Home

	Social Capital of the Home Index	White Gen/Voc	Latino Gen/Voc	Latino Aca	White Aca
(a)	% Quartile 1	33.5	28.3	14.0	15.6
(b)	% Quartile 2	29.7	26.1	27.9	19.3
(c)	% Quartile 3	22.4	30.0	27.3	26.4
(d)	% Quartile 4	14.4	15.6	30.9	38.7
	Odds for being in Quartile 3 & 4 vs. Quartile 1 & 2, compared to White Gen/Voc:				
(e)	Quartile 3 & 4 (vs. Quartile 1 & 2)	1.0	1.4	2.4	3.2

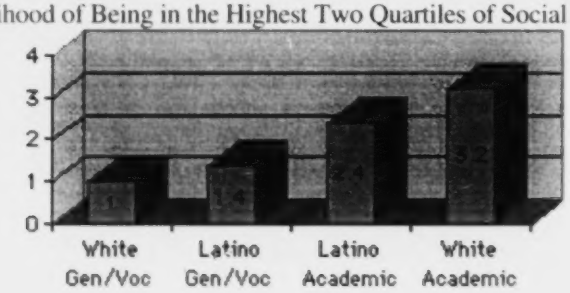
unweighted sample = 940

Based on the contingency table above, White students in general/vocational programs fall in quartile one and two more than any of the other students. As this group has the lowest likelihood of social capital at home, all the other groups will be compared to this group.

Compared to Whites in general/vocational programs, Latinos in the same type of curriculum have only a slightly higher likelihood of 1.4, of having more social capital at home. Latinos and Whites in academic programs, on the other hand, have the much higher likelihood

of 2.4 and 3.2, respectively, of having more social capital at home.[30] The following diagram lists these likelihood.

Diagram 2: Likelihood of Being in the Highest Two Quartiles of Social Capital of the Home



Are we any closer to solving the riddle of why White students in general/vocational programs exhibit lower scholastic performance than Latinos in academic programs? Based solely on the socioeconomic status index examined earlier, White students in general/vocational programs should perform as well as Latinos in academic programs. A look at social capital of the home, however, provides a different angle to the picture. The lower scholastic performance of Whites in general/vocational programs coincides with the lower social capital these students have at home. Likewise, the higher performance of Latino students in academic programs seems to be accompanied by comparatively higher levels of social capital at home. In general, it seems that students in academic programs do better scholastically due to their higher social capital at home.

Let us now see if a similar pattern emerges based on the social capital the student receives in school.

The table below lists the survey variables that were used to estimate social capital of the school using confirmatory factor analysis. As before, the top portion of the table presents

[30] A range test one-way analysis of variance on social capital of the home reveals that Whites in general/vocational programs do have a significantly lower level of social capital at home than both Latinos and Whites in academic programs. It also reveals that Latinos in general/vocational programs have a lower level of social capital at home than Whites in academic programs. It does not, however, characterize the difference between Latinos in either program as significant. See Lopez (1994) for a table listing the results of the range test.

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statistics on the overall goodness of the model. With a total coefficient of determination of 0.85 and an adjusted goodness of fit of 0.87, the model has an acceptable fit.

The two variables that load the most heavily in estimating the latent variable are the expectations of guidance counselors and teachers, i.e., what they think the student should do after high school.

Table 6: Confirmatory Factor Analysis for Social Capital of the School

Model statistics	
Total coefficient of determination:	0.846
Adjusted goodness of fit index:	0.866
Variables in the model	Loadings
What guidance counslr thinks should do after HS	0.831
What teachers think should do after HS	0.798
Amount guidance counslr inflncd plans after HS	0.649
Amount teachers influenced plans after HS	0.593
Rate teacher interest in students	0.347
# teachers interested in students outside	0.284

Taking the estimated variable of social capital of the school, the next table groups the cases into quartiles to then estimate the likelihood of being in the third and fourth quartiles.

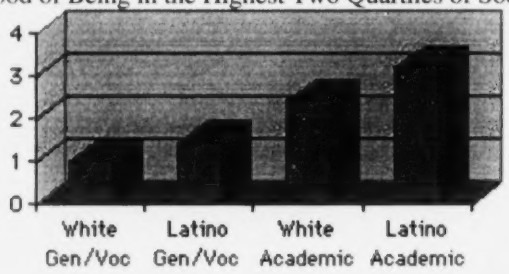
Table 7: Contingency Table for Social Capital of the School

	Social Capital of the School Index	White Gen/Voc	Latino Gen/Voc	White Aca	Latino Aca
(a)	% Quartile 1	34	20.7	17.2	13.9
(b)	% Quartile 2	27.3	33.1	22.3	18.9
(c)	% Quartile 3	21.8	24.2	27.6	23.4
(d)	% Quartile 4	17	22	32.9	43.8
	Odds for being in Quartile 3 & 4 vs. Quartile 1 & 2, compared to White Gen/Voc:				
(e)	Quartile 3 & 4 (vs. Quartile 1 & 2)	1.0	1.4	2.4	3.2

unweighted sample = 940

As in the social capital of the home, row (e) of the table above has Whites in general/vocational programs as the comparison group. Students in that group have the lowest likelihood of being in the upper two quartiles of school social capital. Surprisingly, it is Latinos in academic programs that occupy the high end of the index this time. Again, the likelihoods are presented diagramatically.

Diagram 3: Likelihood of Being in the Highest Two Quartiles of Social Capital at School



The diagram above gives some very curious results. Although the current trend of students in general/vocational programs being ranked at the bottom continues,[31] Latinos in academic programs are ranked as having the highest levels of social capital in school. Whites in general/vocational programs were again ranked as having the lowest levels of social capital, yet these two groups fall in the middle of the socioeconomic spectrum. These findings help further explain why those in general/vocational programs tend to do worse in school than those in academic programs, regardless of race. Furthermore, it seems that what happens at home is mirrored in school since those who tend to have low social capital at home also tend to have low social capital in school, and vice versa.

Thus far, nothing has been said about the participation or effort of the student. Taking the number of hours the student spent doing homework as a measure of student effort, [32] the following table reveals that only a small proportion of each of the four groups of students spent more than five hours per week doing homework.

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[31] Range tests one-way analysis of variance confirms this. In pairwise comparisons, it finds that Whites and Latinos in general/vocational programs have significantly lower social capital at school than do Whites and Latinos in academic programs. Differences among students of the same curriculum were found not to be significant.

[32] The homework variable was constructed and included in the HS&B out of student self-reported answers (Sebring, 1987).

Table 8: Contingency Table for Student Effort

	Hours Doing Homework per Week	White Gen/Voc	Latino Gen/Voc	Latino Aca	White Aca
(a)	% 0-5 Hours	92.1	85.1	82	76.9
(b)	% > 5 Hours	8	14.9	18	23.1
	Odds for studying more than 5 hours, compared to White Gen/Voc:				
(c)	> 5 Hours (vs. 0-5 Hours)	1.0	2.0	2.5	3.5

unweighted sample = 940

Row (c) of the table presents the likelihood that a student in a given group will spend more than five hours per week doing homework. It shows that Whites in general/vocational programs are least likely to spend more than five hours per week doing homework. Whites in academic programs have the highest likelihood of spending more than five hours per week doing homework. Latinos fall in the middle of these two groups. Surprisingly, Latinos in general/vocational programs have almost the same likelihood as Latinos in academic programs of spending five hours or more doing homework per week. Nevertheless, it should be noted that the percentage of students spending more than five hours per week on homework is small. The group with the highest figure, Whites in academic programs, did not even have a quarter of its members doing homework more than five hours per week. The group with the lowest figure, Whites in general/vocational programs, had a meager 8 percent.

IV. The Relative Importance of Social Capital

The analysis thus far reveals that students in academic programs have superior scholastic performance. All the variables used to explain this also reveal that these students have more favorable conditions at home and at school. Although there were important differences among ethnic groups, there seems to be a significant difference between the two categories of curricular programs (general/vocational versus academic). Clearly it is better to be in an academic program than in a general/vocational program. The question now is, what are the conditions needed for a student to choose an academic program versus a general/vocational one? In particular, does social capital play an important role in a student's

choice of one curriculum program over another? *Is social capital an important element in high scholastic achievement?*

Before we fully dwell on this question let us consider the importance of grades and student effort in determining whether a student ends up in a general/vocational program or in an academic program. The argument could be made that students end up in general/vocational programs to begin with because they are less motivated and because they have lower grades. As a result, it could be argued that they will do poorly even if endowed with the same environmental conditions available to students in academic programs. Anticipating that such a critique may surface and create doubts over the results, environmental factors will have to prove their importance over and beyond the effects of grades and student effort in determining whether a student ends up in an academic program. Since the dependent variable is of a dichotomous nature (academic vs. general/vocational), the relative importance of the environmental variables will be tested via a logistic regression. The results are presented in the table below. For ease of interpretation, all the independent variables have been standardized to have a mean of zero and a standard deviation of one.

Table 9: Logistic Regression Results[33]

Overall Statistics			
Model Statistics	Chi-Square	df	Signif.
-2 Log Likelihood	980.6	934	0.1411
Goodness of Fit	928.2	934	0.5475

Logistic Regression Coefficients							
Variables	B	S.E.	Wald	df	Sig	R	Exp(B)
High School Grades	0.9390	0.0932	101.58	1	0.00	0.28	2.56
Student Effort	0.3752	0.0893	17.64	1	0.00	0.11	1.46
Socio-Economic Status	0.4340	0.0869	24.95	1	0.00	0.13	1.54
Social Capital Home	0.2155	0.0919	5.50	1	0.02	0.05	1.24
Social Capital School	0.1982	0.0890	4.96	1	0.03	0.05	1.22
Constant	-0.3327	0.0794	17.58	1	0.00		

[33] All the components of the table are explained in the text except for the column titled "S.E." and "R." The column "S.E." gives the standard errors of the beta coefficients in column "B." The column titled "R" gives the partial correlation coefficient of the independent variable with the dependent variable. It measures the linear association of both variables after the effect from the other independent variables has been removed.

The upper part of the table assesses the overall goodness of the model. The two statistics presented, -2 Log Likelihood and Goodness of Fit, show significance levels of 0.1411 and 0.5475, respectively. With the first statistic a very small figure indicates a poor model. With the second, the converse is true. Given the significance values, the model cannot be rejected unless we are willing to accept a relatively high probability of erroneously rejecting the model.

The second part of the table, titled "Logistic Regression Coefficients," presents information on the relative importance of each variable. The column titled "Variables" lists the variables that are included in the analysis. The first variables listed are controlling for the grades and effort of the student. It then lists the student–environment variables in descending order, according to their importance.

The second column, titled "B," holds the beta coefficients which show the extent to which a unit change in the variable affects the log of the odds of the dependent variable. The signs on the coefficients for the variables of interest are all positive, as would be expected.

Statistically, all the variables showed up as significant. The test is based on a Wald statistic using an alpha level of 0.05. Information on the significance of a variable is given in columns four to six of the table. The sixth column, titled "Sig," gives the significance that is needed to reject the hypothesis that the variable is unimportant. A small significance level in this context indicates that the variable is important to the model.

The coefficients in column "B" are easier to interpret if formulated in terms of likelihoods. This is accomplished by taking the exponent of each coefficient. These values are given by the last column in the table, the column titled "Exp(B)." A value in this column gives the increased likelihood that a student will end up in an academic program when the respective independent variable is raised by one standard deviation. Concerning grades, a unit increase improves the chances by 2.56 that a student will end up in an academic program, as opposed to

being in a general/vocational program.[34] A unit increase in student effort raises the likelihood by 1.46. Definitely, these two variables are important determinants for being in an academic program. However, at the moment, these variables are not of interest, except to control for their effect.

The principal concern in this section is with the variables partitioning the environment of the student. The table ranks the socioeconomic status of the student as the most important factor. Raising socioeconomic status by one standard deviation raises the likelihood of a student being in an academic program by 1.54, even after controlling for the effect of grades and student effort. The table then ranks social capital of the home second with a likelihood value of 1.24. Ranked third in importance among the environmental variables is social capital of the school with a likelihood value of 1.22.

Although the likelihood given to the social capital variables seem small in comparison to some of the other variables, they are far from unimportant. Taken together they exert as much influence as any of the other variables except for grades. Individually, a likelihood of 1.22 translates into a growth rate of 22%, i.e., that if a student has a 0.30 probability of being in an academic program, a unit increase in social capital of the school increases that probability to 0.37, a two unit increase to 0.45, and a three unit increase to 0.54, at which point the student is more likely to choose an academic curriculum than a general/vocational one.

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[34] To better understand what is meant by "increased likelihood," an analogy will be given using growth rates. Suppose a city has a population of 100 persons. If in a year the growth rate of the city is 20%, then the city will have grown by a factor of 1+.20, or 1.20 by the end of the year. The resulting population will then be 120 persons.

Instead of persons, let us now assume that we are speaking on the probability of being in an academic program versus a general/vocational program. Suppose a student with certain characteristics has a 0.22 probability of being in an academic program. Furthermore, we are given the information that increasing the grades by one unit increases the likelihood of a student being in an academic program by 2.55. The resulting probability, then, when the grades are increased by one unit, is 0.22*(2.55), or 0.561. This is a growth rate of 155%. Equivalently, a growth rate of 155% translates into a likelihood of (1+1.55), or 2.55.

Section 5

Discussion

As a population, Latinos are one of the fastest growing groups in the United States. Yet, they[35] are the least educated (Chapa, 1991) , and the least likely to graduate from high school, enroll in college, and receive a college degree (Carter & Wilson, 1993) . High school drop-out rates for Latino youth exceed 50 percent in many urban centers, and are routinely the highest for any group in the nation (Rumberger, 1991) . Nationally, the scholastic situation for Latinos is grim. The analysis conducted in this paper on Latinos in the Western part of the United States supports this statement. Three quarters of Latinos are in non–college bound curriculums where students have characteristically lower grades and lower levels of educational attainment. Moreover, Latinos are 2.1 times more likely to fall into a non–college bound curriculum as non–Hispanic White students.

The analysis reveals, however, that Latinos do not face this situation alone. Close to sixty percent of non–Hispanic White students were also in non–college bound curriculums. Perplexing in this case is that these students performed just as poorly, despite their higher sócioeconomic standing.

The variables of social capital of the home and social capital of the school provide an explanation to this seeming paradox. This study confirmed the fact that students in the non–college bound curriculums have lower levels of social capital at home. And, almost as if by design, these students also have lower levels of social capital at school. The social capital variables also proved their relative importance in determining whether or not a student ends up in a non–college bound curriculum.

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[35] The terms "Latinos" and "Hispanics" are used interchangeably throughout the text. Both terms refer to persons of Spanish-speaking origins, however in the United States the great majority of Latinos/Hispanics are Mexican American and Puerto Rican.

These results have two important consequences. One, they challenge the idea that individuals can be divided into programs based solely on the so-called intelligence of the individual. It even seems that this belief, which permeates the school system, is counter–productive. Too much emphasis on intelligence can lead to the down–playing of personal effort, which seems to be the case for the subjects in this study. At most, only a mere quarter of the students spent more than five hours per week doing homework. One hour per school–day is not nearly enough to learn the subjects of mathematics, English, and science, concurrently. And two, social capital is important because it provides a guideline for schools to improve upon. With the premise that social capital builds as a consequence of a trusting environment, and that a trusting environment promotes a successful learning environment (McDermott, 1977) , let us evaluate the structure of a typical public school in the United States. In particular, let us examine how the very structure of a typical school inhibits social capital formation.

The three key players in a typical school are the student, the teacher, and the parents. Yet, the level of trust typically exhibited by these players for one another is low. Students are not put in a position where they can feel responsible for the intellectual growth and well–being of other students. In fact, it seems that the structure of a typical school promotes students to act in quite the opposite way. Moreover, high school teachers teach about five periods a day, twenty–five students per period, and have a new batch of students every other semester. This results in a teacher trying to win the trust of 150 new students every nine months. Also, parents that are not knowledgeable on the workings of the school system and the potential opportunities available to their sons or daughters have a difficult time promoting their children's education within this system. A typical school in the United States can therefore be characterized as promoting low levels of social capital.

What might a high social capital system that produces outstanding critical thinkers[36] look like? There are two related issues to consider. The first is that building trusting

[36] For this study a critical thinker is one who is able to abstract from a problem through theories.

relationships and critical thinkers takes time. The second is that critical thinking requires that a person takes information from different sources and uses it in a theoretical framework to hopefully obtain new insights on a problem. The second issue, we believe, can best be resolved with a "researcher" mentality—something that needs to be ingrained in our students from the earliest levels of schooling. The *student as a researcher* approach can also help us settle the first issue. For the approach to be effective in our high schools, teachers, or a group of teachers, would have to stay with the same group of students, preferably for all the high school years. Teachers would hold themselves accountable for the performance of their students in such a system. In addition, parents would probably make more of an effort to get to know the teacher and would have more of an opportunity to know the parents of the other students in the group.

This system can be reinforced by a curriculum that teaches students to be teachers. In a *student as teacher* curriculum, students are taught the different learning and teaching theories. While taking other courses the student is also instructed to keep good notes because he or she will then be responsible for teaching the material to an incoming student assigned by the teacher. The purpose for this is twofold: one, to provide an avenue for students to learn the material better since they will see it twice, once as a student and then as a teacher; and second, to provide an environment where students can also hold themselves responsible for the intellectual growth and well–being of other students. The student as a teacher approach would certainly prove useful for the difficult-to-learn courses such as math and science.

This system can even be taken one step further to reinforce the involvement of not only the parents, but of the whole family. This next recommendation can prove to be especially effective with those that tend to have large families, like Latinos and Blacks. Normally, a high school sees itself as responsible only for its student body. Yet a student in the high school may have a brother or sister in junior high school that will be attending the same high school a few years later. When the junior high student is under–performing, high schools do not see it as their problem until that student is attending the high school. By then, however, the student

may be so far behind that it not only makes it hard on the student but also on the high school teacher. The junior high school may be having a hard time resolving the problem by itself. Why not then extend the student as a teacher idea to the whole family? In cooperation with the parents, the oldest brothers and sisters can teach the younger ones within the environment of either one of the schools.

In the school system described above, all three, the teachers, the students, and the parents, are more likely to take a more active role in the learning process. Before schools start reforming, however, this study recommends that the model be tried on a smaller scale to better understand its advantages and disadvantages. The proposed school system is radically different from that currently existing, both in structure and in curriculum. Therefore, a whole new set of teaching materials has to be prepared and teachers will most likely have to undergo a different type of training. In addition, such a system is likely to be more resource-intensive than the current one, so sources of funds need to be identified or produced. This most likely means that society as a whole will have to be thoroughly convinced that such a system is worth the investment, implying that there will be a need for well documented, i.e., well researched, pilot programs implementing high social capital schooling models.

Well documented research will necessarily involve the concept of social capital, or one similar to it. This implies that it must be quantified in some form or another. There is much room for improvement in this arena. The survey variables measuring social capital in this study managed to capture only a part of the total social capital that may be available to the student. Survey variables taken from the High School and Beyond dataset give information on only the parent to student, teacher to student, and counselor to student relationships. No information on the relationship and influence of other individuals, like brothers, sisters, and extended family members, is provided. Additionally, there is very little information on how parents and teachers relate to one another, or on how students relate to other students.[37]

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[37] There is some information on peer influence. However, the variables were of little value since the survey questions were mostly of a "True" or "False" type, or of the type that included a "no opinion" option.

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